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#ESA Abstracts 20190101

The Incidence of Post Traumatic Odontoid Process Fracture in Riyadh-KSA

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Introduction: Cervical spine injury is the most common vertebral injury after major trauma, 20% of all cervical fractures are odontoid fractures. In young adults, odontoid fracture usually happens because of high energy trauma after a motor vehicle accident (MVA). This research aims to provide insight into the incidence of post traumatic odontoid process fractures in Riyadh, Saudi Arabia.

Methods: The design of this study was retrospective. A single level one trauma center data base was used to identify odontoid fractures post MVA. All trauma cases from 2008 to the most recent were included, a total of 17,047 patients, to identify cervical spine fractures and further identify odontoid fracture incidence. The patients' radiographs were reviewed retrospectively, and odontoid fractures were classified by a board-certified spine surgeon. Descriptive analysis was carried out to report basic data distribution.

Results: Total number of cervical spine fracture was 1,195 patients. The incidence of odontoid fractures during the entire study period was 42 out of 480 patients with C2 cervical trauma, constituting 8.75% C2 fractures and 3.5% of cervical spine fractures. The mean age was 41.75±18 years. There were 3 patients (1 male, 2 female) with type I odontoid fracture, 26 (all male) with type II and 13 (11 males, 2 females) with type III.

Conclusion: The incidence of post traumatic odontoid fractures is low given the younger population of this study. This does not predict future incidence rates with the continued improvement of road traffic laws and awareness in the population.

#ESA Abstracts 20190102

Spinal Pseudoaneurysm Mimicking an Osteogenic Tumour: A Case Report

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Introduction: This study presents a rare case of a spinal pseudoaneurysm mimicking an osteogenic tumour on the back, with no prior history of fever, trauma or surgical intervention. In which there was no identifiable symptoms or warning signs. This spinal pseudoaneurysm arises idiopathically from intercostal arteries and segmental arteries. Both of which, to the limit of our knowledge, have not been discussed before.

Case Presentation: This study was done using chart and literature review. We present a case of a 46 year old male, known case of left-sided intracranial haemorrhage due to hypertension and an old cerebrovascular accident. The patient complains of back swelling and intermittent

back pain for the past 3 years. On MRI, the mass showed a pulsating-pattern around it. It also showed layering effect, as there are different wall thickness, enhanced patterns, and enhancement ratio was increased. In addition, it showed flow artifacts with T1 hyper intense areas due to associated thrombus and blood products. These changes noted on the MRI prompted the team to do a colour doppler study to confirm the presence of an aneurysm, and if present; to do a CT angiography. The colour doppler showed turbulent flow, that is, there was a bidirectional pulsatile flow which further confirms the presence of a pseudoaneurysm. Spine CT with contrast showed a right paraspinal lesion at T9 to T11 level. It had contrast enhancement and flow inside, consistent with partially thrombosed aneurysm. The CT also showed evidence of bone remodelling in the adjacent thoracic vertebrae.

Results: The patient opted in for spinal vascular embolization and vascular sheath removal. The right and left intercostal arteries were selected at the level of left and right T4, left T8, bilateral T9, and bilateral T10.

Conclusion: Differentiating between pseudoaneurysms and osteogenic tumour is essential to target later investigations accordingly. And if pseudoaneurysms are left untreated, they could cause bony erosions of the vertebra, which leads to compression fractures. They can further compress the adjacent neurovasculature, which worsens the morbidity.

#ESA Abstracts 20190103

Spinal Cord Ischemia Post-Lower-Extremity Surgery in Paediatric Osteogenesis Imperfecta with Thoracic Kyphoscoliosis: Tertiary Care Center Experience, Jeddah

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Introduction: Spinal cord injury is one of the rare complications after lower-extremity surgery in children with osteogenesis imperfecta (OI). We came across patient who had this complication, among 10 patients who underwent lower-extremity surgery. Because spinal cord injury is a devastating complication not known to most of the physicians treating patients with OI type III with severe femur deformity, we sought to investigate factors that leads to rare complication.

Case description: A 13-year-old patient with OI type III who developed paraplegia after lower extremity surgery because of severe left femur deformity, with a 76° thoracic kyphoscoliosis apex at T4. Outcome measures included operative time, vital signs, and post-surgery recovery of neurologic deficit. Stage 1 of left femur osteotomy and correction had been performed. The mean arterial blood pressure decreased below 50 mmHg at one point during the surgery and might have been a factor in the etiology of the paralysis. Patient recovered 12 months post-operatively. Literature review Paraplegia is an extremely rare condition after non-spine operations. Many factors lead to the risk of a spinal cord event: low mean arterial pressure, duration of surgery, position on the operating table, the degree of kyphotic spine deformity, and unrecognized vascular disease. Somatosensory potentials and motor-evoked potentials together possibly provide high sensitivity and specificity for expecting a postoperative neurologic deficit. Clinical relevance based on literature review the surgeon must be aware of the risk of spinal cord injury. Cautious preoperative assessment is suggested.

Conclusion: MAP should be maintained at a safe level, neuro-monitoring should be considered, surgical time should be reduced and holding a prolonged position that cause pressure on spinal cord should be avoided as much as possible.

#ESA Abstracts 20190104 Percutaneous Fixation for Unstable Thoracolumbar Fractures: A Single Centre Experience

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Introduction: Percutaneous fixation for spinal trauma has been increasingly popular as a minimally invasive option for unstable thoracolumbar fractures. The technique offers several advantages including less trauma, less operative time, and blood loss which might be appealing in polytrauma patients.

Methods: Between January 2018 and September 2019, 40 patients with a mean age of 26 years (range, 19-45 years) underwent percutaneous fixation at a single trauma centre. Outcomes evaluated included local kyphosis, regional kyphosis, rate of cranial facet violations, mean operative time, and total blood loss.

Results: No difference was seen between preoperative and late measurements of anterior body height, posterior body height, local kyphosis, regional kyphosis. There were no complications, revisions, or surgical site infection. No patient underwent elective removal of hardware. Mean operative time was 80 minutes (range, 60-180 minutes), and mean estimated blood loss was less than 50 mL. The incidence of cranial facet violations was 20%.

Conclusions: Minimally invasive pedicle screw fixation is a suitable option for patients with spinal fractures with acceptable safety and efficacy in this small retrospective patient series. We have seen favourable results in our patients who have experienced an increased quality of life following their procedures.

#ESA Abstracts 20190105 Sublaminar Decompression and Fusion in the Management of Lumbar Degenerative Disorders

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Introduction: Lumbar degenerative disorders may result in low back pain, leg pain and limitation of walking distance that can disturb the patients' life. Several surgical procedures have been used to treat spinal canal stenosis ranging from minimal invasive to extensive decompression and fusion. However, recurrence of symptoms or instability may occur postoperatively. This study aims to evaluate efficacy and safety of sublaminar decompression and fusion in the management of lumbar degenerative disorders.

Methods: Prospective study on 20 patients. Pre- and post-operative clinical evaluation included Visual Analogue scale (VAS) for back and leg pain, Oswestry Disability Index (ODI). Pre- and post-operative measurement of anteroposterior thecal diameter, thecal cross-sectional area, right and left foraminal height were obtained using MRI and CT. Seven cases with central canal stenosis, 5 with degenerative disc disease, 4 with foraminal and central stenosis, and 4 with central stenosis and spondylolisthesis were enrolled into the study to be treated with sublaminar decompression and fusion. The mean follow up duration was 13 months (Range: 8-33).

Results: VAS of leg pain improved from 7.3 ± 1.4 to 2.4 ± 0.9 , VAS of the back pain improved from 7.4 ± 0.9 to 2.3 ± 0.5 . The ODI improved from 76 ± 7.5 to 29.5 ± 8.3 . The anteroposterior thecal diameter changed from

10.4 ± 1.4 mm to 14.1 ± 1.1 mm. The thecal sac cross sectional area improved from 134.2 ± 19.6 mm² to 184 ± 20.4 mm². The right foraminal height changed from 4.4 ± 0.5 mm to 5.4 ± 0.5 mm. The left foraminal height changed from 4.2 ± 0.5 mm to 5.2 ± 0.5 mm. The mean time to achieve union was 8.1 months and the rate of union was 95%.

Conclusion: Sublaminar decompression and fusion procedure is effective in spinal canal stenosis decompression, provides large bed posteriorly and posterolaterally for fusion, achieves high fusion rate, safe and is not associated with serious complications.

#ESA Abstracts 20190106 Three-Dimensional Correction of Adolescent Idiopathic Scoliosis

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Introduction: The fixation technique in treating idiopathic scoliosis ranged from either posterior fixation, anterior approach, or combined anterior and posterior approach.

Objective: Assessing the short-term outcome of pedicle-screw method in treating adolescent idiopathic scoliosis (AIS).

Methods: Twenty consecutive patients were prospectively included with minimum of 6-months follow-up. The average age of surgery ranged between 11 and 18 years, with a mean age of 15.25 ± 2.24 years. Radiographic and clinical measurements were assessed at preoperative (preop), postoperative (PO), and final follow-up (FFU) period for curve correction rate, correction loss rate, and complications.

Results: The average main thoracic curve was corrected from $69.80 \pm 21.0^\circ$ preop to $17.73 \pm 7.38^\circ$ postop. This revealed a rate of $74.56 \pm 7.32\%$ correction. The average thoracolumbar curve was corrected from $52.14 \pm 20^\circ$ preop to $15.36 \pm 10.53^\circ$ postop. With a rate of $66.87 \pm 24.81\%$ correction.

Conclusion: Pedicular screw method was efficient and safe method.

#ESA Abstracts 20190107 Intercostal Nerve (ICN) Transfer to Musculocutaneous Nerve (MCN) versus Oberlin Procedure for Restoration of Elbow Flexion in Brachial Plexus Injured Patients

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Introduction: Brachial plexus injuries present by loss of single or combined movements among the upper limbs. Elbow flexion is the fundamental movement among them. Neurotization of the musculocutaneous nerve (MCN) is done using intraplexal elements like (median nerve, ulnar nerve, combined or medial pectoral nerve) or extraplexal elements like (Intercostal nerve (ICN)). This prospective clinical study aims to compare the results between the ICN transfer to MCN vs (median N + Ulnar N) transfer to MCN in restoring satisfactory elbow flexion.

Methods: Between October 2016 and October 2018, the nerve surgery team did neurotization of MCN for seven patients who had lost elbow flexion among BPI. ICN transfer was used in 4 patients while Oberlin procedure (median N+ Ulnar N) in 3 patients.

Results: The group of intraplexal neurotization (Oberlin procedure) showed 66% satisfactory recovery while the group of extraplexal neurotization (ICN) showed 25%. This is matching with the scientific literature, but our study is on progress.

Conclusion: The intraplexal neurotization showed satisfactory motor recovery but the mixed affections among the neuronal elements of the brachial plexus put mainly the protocol of each case and the intra-operative suspected scenario.

#ESA Abstracts 20190108**Vertebral Artery Dissection and Pseudo-Aneurysm in Lucid Interval with C2 Hangman fracture. Case Report with Review in the Literature**

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Introduction: Vertebral artery dissection and pseudo-aneurysm resulted from traumatic cervical spine injury are frequently encountered. Progression and dynamic changes despite normal early angiographic appearance is seldomly reported. The authors here are reporting a case of traumatic hangman fracture who developed symptomatic right vertebral artery dissection and pseudo-aneurysm a week after surgical fixation with dynamic progression and embolic complication resulted in right cerebellar infarction and successfully treated by endovascular intervention.

Methods: The authors present a case of forty-six years old male patient with traumatic atypical Hangman's fracture who developed right cerebellar infarction four days after surgery due to dissection in the right vertebral artery with progressively enlarging pseudo-aneurysm in spite of the normal appearance of the right vertebral artery in the CTA done on admission. The dissection and pseudo-aneurysm were managed by successful endovascular occlusion of the pseudo-aneurysm and parent artery via coil embolization. The MRI brain done after the procedure showed loss of the right vertebral artery signal void with no newly developed infarctions.

Results: Follow up Computed Tomography Angiography on the vertebral arteries is recommended in traumatic patients with unexplained clinical or radiological findings due to the natural history of the traumatic vertebral arteries dissection which may include lucid interval between the injury and presentation.

Conclusion: Based on the literature and the presented case we recommend: 1) Screening for vertebral artery injuries in any patient meeting the Denver screen criteria, 2) Computed Tomography Angiography on the vertebral arteries is an effective diagnostic tool for screening patients especially in the emergency situations, 3) Management of the vertebral artery injuries should be taken seriously and the decision can be tailored according to the patient presentation and the radiological grade of injury. The details of this case will be discussed in this report.

#ESA Abstracts 20190109**Surgical Management of Intra-Axial Cervicomedullary Tumours**

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Introduction: Intrinsic cervicomedullary tumors represent heterogeneous group of intrinsic neoplasms that are typically low grade and generally carry a good prognosis despite their hazardous location. Non-infiltrative pathologies in this region can be surgically resected with acceptable morbidity rates.

Methods: This study includes patients with cervicomedullary tumors admitted to the Neurosurgery Department, Alexandria University between January 2009 and June 2019.

The charts of these Patients were analyzed retrospectively regarding their symptomatology, clinical findings, radiology and outcome after surgery. All patients were operated by the same surgeon. This work includes only intra-axial tumors that span the cervicomedullary junction with or without an exophytic portion. Extra-axial primary or metastatic tumors located at the cervicomedullary junction were excluded.

Results: Twenty-one cases (9 males and 12 females) were included in this study. Age ranged from 8-60 years with an average of 24.8 years. The most common pathology was pilocytic astrocytoma encountered

in 10 cases (47.6%) followed by hemangioblastoma in 4 cases (19.1%). Other pathologies included ependymoma in 3 cases, fibrillary astrocytoma in 2 cases, anaplastic astrocytoma in one case and GBM in one case.

There was a single post-operative mortality in this series; this patient died on the 4th post-operative day due to massive pulmonary embolism. Total resection was achieved in 17 cases (80.9%), subtotal resection in 2 cases and partial resection in another 2 cases. Recurrent tumor developed in 3 cases during the follow up period (14.3%) and 2 patients died as a result of tumor progress.

Conclusion: Cervicomedullary tumors are a subset of brain stem tumors that predominantly includes low-grade neoplasms and consequently have long-term survival. Despite their close relation to vital neural structures, surgery represents the mainstay of treatment with acceptable rates of morbidity and mortality.

#ESA Abstracts 20190110**Spinal Arterial Aneurysms**

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Introduction: Spinal aneurysms are rare lesions. Their incidence associated clinical conditions and management were not obvious. We reported two cases of spinal arterial aneurysms. A review of literature for these lesions was conducted to update our knowledge.

Methods: The first case of female aged 73 years old manifesting subarachnoid hemorrhage (SAH). A digital subtraction angiogram (DSA) revealed spinal artery aneurysm originating from a communicating segment between the anterior spinal artery (ASA) and the left posterior spinal artery (PSA) at the cervicomedullary junction. Other anomalies of vertebrobasilar circulation were detected. Given that there was no good endovascular treatment option, patient underwent surgical excision and clipping of the aneurysm. The second case of 31 years old male presented with left arm brachialgia. A DSA showed upper cervical arteriovenous malformation (AVM) with multiple feeders mainly from left posterior spinal artery with intra-nidal aneurysm. As regard to the nidus complexity and the multiplicity of feeders, surgical excision and clipping of the intra-nidal aneurysm was done. Author reviewed all papers described spinal aneurysms (SAs) and related conditions.

Results: A systematic review of PubMed published on 2013 includes all papers concerned with spinal aneurysms (SAs) from (1941-2012) were reviewed. SAs were 55 aneurysms associated with an AVM (SA-AVM) and 68 were isolated spinal aneurysms (iSA). The most common location of the SAs was the cervical spine (42.5%). Complete angiographic obliteration of the lesion was achieved in 94.1% with surgery, 54.8% in those who underwent endovascular therapy. In our reported cases postprocedural DSA revealed complete resolution of the aneurysm.

Conclusion: SAs often occur with AVM or other conditions that induce hemodynamic stress, such as bilateral vertebral occlusion. Surgery and endovascular therapy both can be treatment for iSA, whereas for (SA-AVM) surgery is more convenient. Keywords: spinal artery, aneurysm, arteriovenous malformation.

#ESA Abstracts 20190111**Combined Percutaneous Pedicle Screw Fixation and Minimal Access Open Posterior Decompression for Treatment of Unstable Thoracolumbar Fractures**Mohamed awad, MD¹, Mohamed Foad, MD², Aynam Hafez, MD³, Khalid saeed, MD¹¹ *Ain sham university;*² *Cairo university;*³ *- MUST university, Cairo, Egypt*

Introduction: Percutaneous fixation of unstable thoracolumbar fractures is increasingly used as alternative to open surgery. The complexity of the fracture pathology and spine dynamics affects the indications of percutaneous treatment. Objectives: To evaluate the percutaneous pedicle screw fixation combined with posterior minimal access decompression of neural canal in unstable thoracolumbar fractures.

Methods: Ten patients with unstable thoracolumbar fractures with significant neural compression who are indicated for both fixation and neural canal decompression were treated with this technique. Patient both neurologically intact or with deficit with only single vertebral fractures are included. All patients underwent percutaneous fixation and decompression. The procedure is assessed for the effectiveness of the decompression and surgical events.

Results: Effective percutaneous fixation can be done in all patients. Effective dural and root decompression can be achieved. No infection or hardware related problems encountered. No deterioration of pre-operative neurologic status. No blood transfusion given.

Conclusion: Percutaneous fixation of unstable fractures with minimal access decompression of neural canal is an effective and safe technique for treatment of single level unstable thoracolumbar fractures.

#ESA Abstracts 20190112

Applicability of Conventional Sub-Occipital Approach for Resection of Foramen Magnum Meningiomas: Early Experience

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Introduction: Foramen magnum meningiomas (FMM) is a challenge for neurosurgeons because they occur in contact with important, nervous, and vascular structures that cannot be sacrificed or retracted during surgery. Multiple approaches have been advocated to treat these lesions in different locations. This study aims to present our experience with 8 cases of FMM resected using the midline sub-occipital approach and discuss the versatility of this approach in treatment of such lesions.

Methods: From November 2015 to January 2019, we treated 8 patients with FMM at our institution. There were 6 females and 2 males. All patients Scanned with magnetic resonance imaging (MRI) with contrast enhancement preoperatively for diagnosis. A sub-occipital craniotomy was performed in all patients as well as the removal of the posterior arch of C1. Partial removal of C2 was necessary in 2 patients, we expanded our exposure laterally with a tilt of the operating table 30 degrees to the contra lateral side to improve the angle of vision to devascularize and resect the lesions located posterolaterally in the foramen magnum. Neck pain was the most common symptom of presentation in all 8 patients followed by bulbar symptoms in 4 patients and disturbed gait and upper limbs dysesthesia in 1 case.

Results: total resection was achieved in 5 cases with subtotal resection in 3 patients due to high vascularity and the extreme lateral location of the lesions. 15 days post operative, neck pain decreased in all patients and faded away in 45 days. Neurological improvement was observed in 2 patients affected by bulbar symptoms 2 months postoperative while the other 2 remained as preoperative. Two patients presented transient worsening after surgery regarding neck pain and motor power. We had no postoperative mortality.

Conclusions: In our experience we can conclude that FMM can be resected safely in most instances by the suboccipital approach alone in order to avoid the use of extensive skull base approaches.

#ESA Abstracts 20190113

The “Kickstand Rod” Technique for Correction of Post-Operative Coronal Imbalance in Patients with Spinal Deformity

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Introduction: The “Kickstand-Rod” technique: new surgical procedure for correction of coronal imbalance in spinal deformity patients. Coronal plane correction is difficult to achieve and maintain. This study aims to illustrate a new technique for coronal imbalance in deformity patients.

Methods: A patient suffered from combined sagittal and coronal imbalance suffered post-operative after operation for idiopathic scoliosis. We used this technique for coronal imbalance in addition to pedicle subtraction osteotomy for sagittal imbalance.

Results: There was successful correction of the coronal imbalance using this technique.

Conclusion: The technique is a safe and effective method for correction of coronal imbalance in deformity patients.

#ESA Abstracts 20190114

When We Should Not Perform Discectomy? Clinical and Imaging Prediction

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Introduction: Lumbar disc herniation is a common health problem which may present with variable symptoms according to the level of the herniated disc. Different management techniques are present, however conservative treatment with spontaneous resolution of the disc has been described. Aim of the study was to assess the role of imaging to predict the possibility of spontaneous disc regression.

Methods: the study included 30 patients with disc herniation who showed spontaneous regression after conservative treatment.

Results: Thirty patients were included in the study, 15 patients were male, age ranged from 24 to 61 years, 50% occurred in L5-S1 level, 45% L4-L5, and 5% L1-L2. 80% presented with unilateral sciatica, 20% bilateral, size of herniated disc ranged from 4 to 20 mm, 70% were more than 10 mm. 60% of the prolapse were horizontal in direction, 23% were down and 17 % were up. In 70% of cases the prolapse was posterolateral. The canal was stenotic in only 15 % of cases. The original disc was degenerated in all cases, 40% of cases had moderated disc degeneration and 60% had high grade of degeneration. Only 15% of cases had grade 2 Modic changes of adjacent vertebral bodies.

Conclusion: The regression of herniated lumbar disc is highly suspected in cases with posterolateral herniation, absence of canal stenosis, high degrees of disc degenerative changes, and absence of Modic changes. Also migrated hernias, trans-ligamentous herniations, L4-5 level herniations and massive disc herniation. However, a larger number of cases and a comparative study is needed to confirm these observations. Also, patients with high pain threshold early clinical improvement had high possibility of spontaneous regression. Complete disc regression is observed more in cases of migrated, sequestered, and extruded disc. the duration of conservative treatment should be prolonged and correlated with the patient tolerance of pain unless neurological deficit.

#ESA Abstracts 20190115

Mini Access Spine for Fixation of Thoracolumbar Spine Fractures

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Introduction: The aim of treatment of spinal fractures is to resorted stability. Spine fractures are serious injuries can lead to neurological complications. The surgical technique can be either through posterior midline incision or paraspinal posterior open approaches or Percutaneous. The goal of this study is to evaluate the effectiveness of Mini access approach for treatment of dorso-lumbar fractures by mini open surgical using ordinary pedicle screw fixation.

Methods: This study involves Patients of acute traumatic single level dorsolumbar spine fractures requiring surgical intervention. Thirty-two (22 male, 10 female), age range 17-52 years (31.1 ± 7.9 yrs.) with dorso-lumbar fractures (D12:8, L1:17, L2:4, L3:3) with TLICS score >6 were studied (Feb 2009-Feb 2018). Total of 128 screws were used of which 3 screws were mal positioned (2.3%). Open conversion was done in two cases (6.25%) due to difficulty in screw positioning.

Results: No patient had post-operative neurological deterioration. Operative time (minutes) 65.0 ± 23.2 . The average blood loss is 94ml Fluoroscopy time 5.2 ± 2 (seconds). Postoperative hospital stays (days) 3.1 ± 1.8 days. The follow-up period an average of 10 months. The Accuracy rate of screws placement Type I: position acceptable in 108 screws. In 16 screws were classified as Type II: placement unacceptable in 3 screws were classified as Type III: screws that are causing neurovascular injury (all cases causing radicular pain).

Conclusion: We conclude that Mini access Spine surgery for pedicle screws fixation is a safe, reliable, cost-effective technique with favourable results in acute polytrauma cases requiring standalone ligamentotaxis. It is cost effective, minimal soft tissue dissection with short hospital stay. The authors believe that the data support its use and that this technique may be applicable for cases not needs spinal decompression. Mini access spinal technologies enable surgeons to achieve the same surgical objectives as with a traditional, open procedure.

#ESA Abstracts 20190116

Restoration of Lumbar Lordosis Using Minimal Invasive Transforaminal Lumbar Interbody Fusion in Isthmic Spondylolisthesis

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Introduction: Lumbar spinal fusion has been assumed to be the treatment of patients with failed conservative management in cases of isthmic spondylolisthesis. Instrumented fusion has corrected the spinopelvic parameters deformity in these cases due to the ability of pedicle screws to reduce and maintain the reduction till the fusion occur. Supported by some growing evidence, the main advantages of percutaneous pedicle screws are the avoidance of unnecessary muscle disruption and soft tissue dissection with decreased blood loss and faster recovery with less hospital stay. Controversy remains about the ability of the percutaneous instrumentation to reduce and maintain the slippage and the fusion rate of these segments and restoration of segmental lordosis. The purpose of this prospective cohort study with review of literature is to study the safety and the effectiveness of minimal invasive transforaminal lumbar interbody fusion (MI-TLIF) in

the management of isthmic spondylolisthesis and to study the changes that occur in the spinopelvic parameters and lumbar lordosis of these patients.

Methods: Twenty-four patients with low grade isthmic spondylolisthesis with axial low back pain and/or leg pain were treated with minimal invasive transforaminal lumbar body fusion augmented with percutaneous pedicle screw fixation. The operative data (blood loss, radiological exposure, operative time) were evaluated and the radiological assessment for reduction and the changes in spinopelvic parameters, total and segmental lordosis were studied on standing long films X-ray. The patient functional outcome was evaluated using Oswestry Disability Index (ODI) and visual analogue scale (VAS) for back and leg pain and treatment related complications were reported. **Results:** The blood loss and operative time were reduced by the increase in learning curve. There was a significant correction in the slip degree and the slip angle in comparison to the preoperative data. Post-operative correction of the spinopelvic parameters till nearly normal values was also obvious which was maintained in the follow up. No major wound related complication was reported. Total and segmental lordosis were restored. One case showed backward displacement of the cage with no neurological deterioration. Local bone graft from the removed facet joint and parts of the lamina was used with PEEK cages to obtain interbody fusion and the fusion rate was about 95.83% evaluated in the final follow up radiographs. ODI and VAS of back and leg pain were significantly reduced in postoperative data when compared the preoperative ones.

Conclusion: Minimal invasive TLIF with local bone graft has been shown to be a good modality in reducing isthmic spondylolisthesis and correct the spinopelvic parameters deformity. MIS TLIF can restore lumbar lordosis and segmental lordosis. Cost effectiveness of this technique must be evaluated thoroughly with the final and late outcome of these fracture management. More randomized controlled and comparative studies with open TLIF are needed to support these findings.

#ESA Abstracts 20190117

Unilateral Versus Bilateral Facetectomies with Minimal Invasive Transforaminal Lumbar Interbody Fusion in Isthmic Spondylolisthesis

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Introduction: Conventional lumbar interbody fusion has been used internationally for many years as a method of treatment of spondylolisthesis and has been recognised as a reliable way of relieving these symptoms. Minimally invasive transforaminal lumbar interbody fusion (MI-TLIF) has become more prevalent in recent times as it appears to have better short-term outcomes than conventional lumbar interbody fusion. Instrumented fusion has corrected the spinopelvic parameters deformity in these cases due to the ability of pedicle screws to reduce and maintain the reduction till the fusion occur. Supported by some growing evidence, the main advantages of percutaneous pedicle screws are the avoidance of unnecessary muscle disruption and soft tissue dissection with decrease blood loss and faster recovery with less hospital stay. The purpose of this prospective cohort study is to study the safety and the effectiveness of minimal invasive transforaminal lumbar interbody fusion (MI-TLIF) in the management of isthmic spondylolisthesis and to compare the results of minimally invasive transforaminal lumbar interbody fusion (MI-TLIF) using unilateral versus bilateral facetectomies in terms of peri-operative and long-term outcome measures.

Methods: Twenty-four patients with low grade isthmic spondylolisthesis with axial low back pain and/or leg pain were treated with

minimal invasive transforaminal lumbar body fusion augmented with percutaneous pedicle screw fixation 12 patient were operated with unilateral facetectomy and other 12 patient were op. With bilateral facetectomy. The operative data (blood loss, radiological exposure, operative time) were evaluated and the radiological assessment for reduction and the changes in spinopelvic parameters, total and segmental lordosis were studied on standing long films X-ray. The patient functional outcome was evaluated using Oswestry Disability Index (ODI) and visual analogue scale (VAS) for back and leg pain and treatment related complications were reported. Degree of correction of the slippage, correction of spinopelvic parameters, incidence of contralateral radiculopathy and correction of the lordosis between both groups are compared.

Results: The blood loss and operative time were reduced by the increase in learning curve. There was a significant correction in the slip degree and the slip angle in comparison to the preoperative data in bilateral facetectomy group. Post-operative correction of the spinopelvic parameters till nearly normal values was also obvious which was maintained in the follow up in both groups. No major wound related complication was reported. Total and segmental lordosis were restored. One case showed backward displacement of the cage with no neurological deterioration. Local bone graft from the removed facet joint and parts of the lamina was used with PEEK cages to obtain interbody fusion and the fusion rate was about 95.83% evaluated in the final follow up radiographs. ODI and VAS of back and leg pain were significantly reduced in postoperative data when compared the preoperative ones. Two cases showed contralateral radiculopathy in the unilateral facetectomy group.

Conclusion: Minimal invasive TLIF with local bone graft has been shown to be a good modality in reducing isthmus spondylolisthesis and correct the spinopelvic parameters deformity. MIS TLIF can restore lumbar lordosis. Cost effectiveness of this technique must be evaluated thoroughly with the final and late outcome of these fracture management. Bilateral facetectomy is better than unilateral one for more correction and avoiding contralateral radiculopathy. More randomized controlled and comparative studies with open TLIF are needed to support these findings.

#ESA Abstracts 20190118 Management of combined sacral and dorso-lumbar fractures using segmental fixation

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Introduction: In multiple traumas if spine fracture is found usually single or multiple adjacent segments are involved. In some few cases multiple fractures in the spine is found in the dorso-lumbo-sacral area with a sparing of intermediate two or three motion segments. The decision for surgical stabilization is a little challenging as this may involve both fractures with the intermediate segments which results in long segment fixation. Segmental fixation can help in avoiding long segment fixation and can provide adequate stabilization for patients. The Objective of this study is to evaluate stability of segmental fixation for combined sacral & dorso-lumbar fractures.

Methods: Patients having both sacral fractures combined with dorso-lumbar fractures were reported. Full neurological assessment was done. Both fractures were managed in separately or at the same session including lumbo-pelvic fixation and short segment dorso-lumbar fixation. We assisted the pre and post-operative clinical improvement, the presence of any system failure, presence of adjacent segment degeneration. We reported 6 cases with C3 sacral fractures with deferent neurological deficits and having combined dorso-lumbar fracture (D12-L1-L2). Female to male ratio was 4:2, mean age was

found 25.6 ± 7.4 , all the patients have double sphincter affection with affection of S1 root and half of them have unilateral L5 root affection. Half of the patients were operated in two separate sessions while the rest were done at the same session. Mean post-operative follow up was 4 months.

Results: No intraoperative complications were reported. Post-operative sacral wound infection was found in two cases. All cases showed no improvement of the sphincter function at 4 month follow up. All patients have partial recovery of the foot movement on extensive physiotherapy. Five patients became ambulatory at the four month follow up while one patient have severe post-operative left leg dysphasia that improved partially on local injection, still cannot ambulate at the 4 month follow up. No patients from developed any adjacent segments disease or mal fusion.

Conclusion: Segmental fractures of combined sacral and dorso-lumbar fractures with preservation of several intermediate motion segment can be a good option for management of multiple spine fractures and can avoid doing long segment fixation.

#ESA Abstracts 20190119 Percutaneous Endoscopic Thoracic Discectomy; Transforaminal Approach

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Introduction: Development of diagnostic tools has resulted in early detection of thoracic disc herniations (TDH) even when the herniated disc is soft in consistency. In some of the cases, it is considered better not to opt for surgical treatment due to the unduly high morbidity and potential complications associated with conventional approaches. The authors have applied percutaneous endoscopic thoracic discectomy (PETD) technique to soft TDHs in order to avoid the morbidity associated with conventional approaches.

Methods: We report one patient with D10-11 thoracic disc herniation with myelopathic symptoms. The patient was positioned in a prone position with intravenous sedation and local anesthetic infiltration. We introduced a cannula into the thoracic intervertebral foramen using endoscopic foraminoplasty technique. Discectomy was performed with mechanical tools, continuous endoscopic visualization and fluoroscopic guidance. Functional status was assessed preoperatively and postoperatively using the Oswestry Disability Index (ODI).

Results: The mean ODI scores improved from 52.8 before the surgery to 25.8 at the final follow-up, long tract signs showed improvement. The operative time was 55 minutes.

Conclusion: The technique allows a smaller incision and less morbidity. Soft TDH is amenable to this minimally invasive approach in selected patients with myeloradiculopathy.

#ESA Abstracts 20190120 Evaluation of Quality of Life of Patients with Adolescent Idiopathic Scoliosis after Surgical Correction

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Introduction: Idiopathic scoliosis is a type of deformity that interferes with the quality of life. Many previous studies tried to assess the health related quality of life using patient reported outcome measurements. Arabic version of scoliosis research society-22 questionnaire (SRS-22) is known to be reliable and valid tool to assess the quality of life in

patients with idiopathic scoliosis. This prospective cohort study aims to evaluate quality of life of patients with AIS after surgical correction using Arabic version of scoliosis research society 22 (SRS-22) questionnaire.

Methods: Between 2016 and 2018, twenty five patients were surgically treated for AIS with Cobb angle > 45 degree. In this study we used Arabic version of SRS-22 questionnaire to assess the clinical outcome. Plain whole spine x ray was used to assess the radiological outcome. All patients underwent follow up for 6 months postoperative.

Results: This study included 25 patients (22 female, 3 males). The mean age at time of surgery was 14.7 ± 1.7 years (range 11-18 years). The mean coronal Cobb angle was 55.81 ± 8.72 preoperative and was 7.98 ± 2.26 postoperative. Cobb angle, coronal and sagittal balance improved significantly after surgery ($P < 0.001$). The scores of functional activity, pain, self-image/appearance, mental health, and satisfaction were 4.31 ± 0.28 , 4.57 ± 0.27 , 4.85 ± 0.31 , 4.85 ± 0.17 , and 4.96 ± 0.21 , respectively postoperative. The total SRS-22 score was 4.45 ± 0.16 . Correlation between different domains of (SRS)-22 questionnaire after surgical correction shows that only function/activity score has a positive significant correlation with the mental health domain ($r = 0.417$) ($P = 0.038$). **Conclusion:** The Arabic version of SRS-22 questionnaire was very useful in patients' perceptions. Self-image domain was showing the highest upgrading among all other domains.

#ESA Abstracts 20190121

Spontaneous Resorption of Herniated Lumbar Disk: Observational Retrospective Study in 9 Patients

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Introduction: Spontaneous resorption of herniated lumbar disk was explained in the literature by different mechanisms, and multiple predictive factors for resorption were reported in numerous studies. The purpose of this study was to evaluate the phenomena of spontaneous resorption of herniated lumbar disk without surgery (mechanisms, predictive factors, expected time for resorption, and proper time for conservative treatment).

Methods: This retrospective clinical case series included 9 patients with herniated lumbar disk on initial magnetic resonance imaging (MRI). The mean age was 39 ± 6.3 years, and the male to female ratio was 2:1. All patients presented with back pain and sciatica without motor deficit. All patients refused surgical intervention; therefore, they were treated conservatively. Patients were followed-up clinically and radiologically (MRI) in the outpatient clinic on regular visits (for 18 months).

Results: Spontaneous resorption of herniated disk was found in all patients in a mean time of 8.7 ± 3.2 months. All patients recovered clinically in a mean time of 5.7 ± 1.6 weeks by conservative treatment. Large and/or sequestered disks were associated with rapid resorption. Early recovery patients showed early spontaneous resorption of the disk.

Conclusion: Spontaneous resorption of herniated lumbar disk can occur by different mechanisms (retraction, dehydration, and inflammatory mediated mechanism). Large and/or sequestered disks are essential predictive factors for rapid spontaneous resorption. Furthermore, early clinical recovery is usually associated with quick resorption of the herniated disk.

#ESA Abstracts 20190122

Cranio-cervical Instability with Subaxial Cervical Deformity - Case Presentation

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Introduction: Cranio-cervical instabilities may occur due to different pathological conditions that affect the cranio-cervical junction. Management of these conditions is usually challenging due to the complex anatomical structure. This case report study aims to highlight a complex case of cranial settling and subaxial cervical kyphosis secondary to foraminotomy and posterior laminectomy.

Methods: A 30-year-old male patient presented with progressive spastic quadriparesis. He was operated 10 years ago with foramen magnum posterior decompression and laminectomy of C2-5. CT, CT-angiography, and MRI of the cranio-cervical junction were done. He had atlas assimilation, basilar invagination with myelopathy at the cranio-cervical junction. Subaxial cervical kyphosis was also evident.

Results: After comprehensive preoperative planning. The procedure was staged in two sessions: the first included anterior decompression, release, and fusion of 4 subaxial cervical levels. The second procedure included posterior occipito-cervico-dorsal fixation, with C1/2 distraction (Goel procedure) and bilateral cages implantation at C1/2 to reduce the dens to its original relation to the foramen magnum.

Conclusion: Cranio-cervical and cervical deformities are complex conditions that need extensive preoperative planning. Staging the procedure and attending two senior surgeons should be considered. Goel C1/2 distraction fusion is effective in reducing basilar invagination.

#ESA Abstracts 20190123

Principles of MISS in Lumbar Spine radiculopathy

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Introduction: MISS is becoming essential in the management of lumbar spine radiculopathy. This study aims to evaluate the versatility of different endoscopic procedures in lumbar spine radiculopathy.

Methods: Between 1998-2014, the study was conducted on 1000 patients complained of lumbar radiculopathy underwent different endoscopic procedures: percutaneous endoscopic interlaminar lumbar foraminotomy (PEILF), Percutaneous Endoscopic Interlaminar Lumbar Discectomy (PEILD), uniportal percutaneous endoscopic interlaminar lumbar discectomy 1x2 UP-PEILD 1x2, uniportal bilateral percutaneous endoscopic interlaminar lumbar laminotomy +/- Discectomy (UP Bil PEILL,D), uniportal bilateral percutaneous endoscopic interlaminar lumbar laminotomy 1x4 (UP Bil PEILL 1x4), percutaneous endoscopic interlaminar lumbar foraminotomy +/- discectomy in recurrent disc (Rec PEILF,D). Follow up was reported 12-192 months.

Results: Outcome reported excellent in 700 patients, Good in 225 patients, Poor in 65 patients and Fair in 10 patients. Complications were comparable to standard microscopic discectomy.

Conclusion: Minimally invasive spine surgery MISS as endoscopy is feasible effective in lumbar spine radiculopathy. It offers short hospital stay early return to work. However, it's a demanding procedure, needs learning curve.

#ESA Abstracts 20190124

Lumbopelvic Fixation in Traumatic Sacral Fractures

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Introduction: Although most sacral fractures can be treated non-operatively, for unstable fracture patterns, several surgical options are available, the goals of which are to provide early mobilization and pain relief. Plan of management consists of surgical stabilization and/or neural decompressive procedures. Purpose: To evaluate safety and

efficacy of Lumbopelvic fixation for treatment of traumatic sacral fractures. Study Design: prospective clinical study.

Methods: All patients with sacral fractures who underwent Lumbopelvic fixation were evaluated clinically preoperative and post-operative for motor power, sphincter disturbance and pain based on VAS and radiologically for fusion.

Results: 24 cases were operated for Lumbopelvic fixation, 17 cases trauma was caused by fall while 7 cases was caused by road traffic accident, eleven cases were male (45%) while 13 cases were females (55%) Type 2 Denis were 10 cases , 6 cases type 1 Denis , 8 cases type 3 Denis, follow up periods ranges from 6 to 12 months. Preoperative mean VAS was 8 Oswestry disability index was 89, Post operative mean VAS was 2.5 Oswestry disability index was 16. Surgical site infection rate was 24 % mainly in early cases that improved later by taking certain precautions. Fusion was accomplished in 100% of cases, However Deformity correction was technically challenging. **Conclusion:** Lumbopelvic fixation is safe and effective method of treatment of traumatic sacral fractures.

#ESA Abstracts 20190125 Percutaneous Lumbar Fusion is a Must

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Introduction: Percutaneous Lumbar Fusion is associated with minimal tissue trauma with preservation of lumbar muscle.

Methods: We operated on 85 patients using the paramedian lumbar skin incision and gentle muscle separation using the dilators to reach the required level or even unilateral small midline lumbar skin incision if the quadrants were of available then unilateral medial facetectomy and discectomy with TILF lumbar cage replacement then direct muscle and skin closure. Then percutaneous pedicular screw insertion.

Results: Minimal back wound pain and early immobilization from bed in the same day for young patients or second day for elderly patients CRP and CPK were done second day one week and two weeks post-operative we did not notice any elevation of both CRP or CPK indicating minimal fissure trauma some patients agreed to do EMG study of their lumbar back muscles and we noticed nothing or any nerve or muscle affection.

Conclusion: Percutaneous pedicular screw fixation is a safe spine procedure that should be used in any lumbar spine fixation.

#ESA Abstracts 20190126 Debate of Anterior Cervical Fusion Failures and Solutions

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Introduction: This study aims to describe how to do anterior cervical fusion in a safe way with less time consuming preserving the anterior cervical lordosis.

Methods: Corpectomy were done for 300 patients throughout the period between 1994 till 2018 using an integrated plate and corpectomy prosthesis in one piece. this was done in one two or three levels. These prostheses can be bent in situ to adapt the anterior cervical curvature and this prosthesis was filled with moulded bone fragments taken from the corpectomy site.

Results: All the patients showed good and excellent results without metal hardware failure maintains the cervical curvature without adjacent segment degeneration with a mean follow up one year duration some patients we were able to follow up to 4 years but the minimal was 6 months. We did not use any bone except the patient's bone useless in cases with bone tumors or infection.

Conclusion: Anterior cervical fusion using this cage (ESCP) is a safe less time consuming procedure maintains the anterior cervical curvature.

#ESA Abstracts 20190127 Annuloplasty Procedures for Chronic Discogenic Back Pain

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Introduction: Spinal lipomas are generally thought to occur as a result of failed primary neurulation. However, some clinical features cannot be explained by this theory. A novel classification of spinal lipomas based on embryonic changes seen during primary and secondary neurulation was proposed.

Methods: A total of 100 patients with occult spinal dysraphism underwent surgeries between August 2007 and May 2018 at Neurosurgical department, Suez Canal University Hospital (Ismailia, Egypt). This group of patients had 50 spinal lipomas, including 28 conus spinal lipomas, 4 lipomyelomeningocele, and 18 filum lipomas, which the author classified into 4 types based on neural tube formation during embryonic development. Type 1 is defined as pure primary neurulation failure; Type 2 ranges from primary to secondary neurulation failure; Type 3 consists of secondary neurulation failure (early phase); and Type 4 is defined as secondary neurulation failure (late phase). The author also reviews embryogenesis in secondary neurulation and analyse the clinical utility of the new classification.

Results: There were 15 Type 1 spinal lipomas, 14 Type 2, 13 Type 3, and 8 Type 4. All filum lipomas fell into the Type 4 spinal lipoma category. Associated anomalies or anomaly syndromes were clearly observed only for Type 2 in 4 spinal lipomas encompassing failed secondary neurulation. Radical resection was feasible for Type 1 spinal lipomas. **Conclusion:** Secondary neurulation of the spinal cord gives rise to the conus medullaris and filum terminale, which are often involved in spinal lipomas. Formation of spinal lipomas seems to be a continuous process overlapping primary and secondary neurulation in some cases. Radical resection was indicated for Type 1, but not for Type 2, spinal lipomas.

#ESA Abstracts 20190128 Extraforaminal Lumbar Disc Herniation: How to Approach

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Introduction: Extraforaminal disc herniation is a rare condition. Approaching through the traditional interlaminar technique might fail to remove it totally or can hazardous the pars above. Purpose: To illustrate the extraforaminal technique for patients suffering from disc herniation in this area. Study Design: A retrospective study.

Methods: We operated on five patients in the last year, four males and one female. Four cases were L4-5, while one case was L5-S1. Dissection and retraction of the paraspinal, muscles, exposure of intertransverse space, resection of the intertransverse membrane, identification of the nerve root and ganglion, and scan under them to identify and resect the disc fragment herniated.

Results: All patients achieved complete relieve of their intractable pain. Only one case suffered from paraesthesia relieved gradually with medical treatment.

Conclusion: The extraforaminal inter transverse approach is a safe and effective technique for treatment of patients suffering from extraforaminal disc herniation.

#ESA Abstracts 20190129 Thoracoscopic Posttraumatic Kyphosis Correction

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Introduction: PTK after insufficient treatment of unstable fractures usually presents with pain and decreased back function. The results of PTK correction through a minimally invasive thoracoscopic approach with an anterior titanium cage have not been reported before. This retrospective cohort study aims to determine the long term functional and radiological outcomes after thoracoscopic posttraumatic kyphosis (PTK) correction.

Methods: Data was collected of all patients that underwent thoracoscopic PTK correction with an expandable cage between 2007 and 2017. Kyphosis and intervertebral body height (IBH) was assessed on radiographic material. Quality of life (QOL) and functional outcome scores were determined using EQ5D and ODI. Additionally, satisfaction and subjective symptom improvement were determined.

Results: Fourteen patients were treated for symptomatic PTK through a combined thoracoscopic anterior and posterior approach. Nine received initial conservative fracture treatment and five underwent initial posterior fracture fixation. All patients were presented with pain and without neurological injury. The mean time between injury and PTKC was 15,4 months. Cobb angle's (CA) improved with 10,6 immediately after PTKC. During the first follow-up 4,8 kyphosis correction was lost, but CA's remained stable at longer follow-up. Bony fusion was achieved in 92% of patients after 16 months. The majority reported 85 months after surgery improvement of symptoms, satisfaction, and willingness to undergo the procedure again. The mean EQ-5D index score was 0,71 and the mean ODI score was 22,3.

Conclusion: The results of minimal invasive thoracoscopic PTKC using an expandable cage are satisfactory. Most patients are satisfied after treatment and no neurological complications occurred. Functional and QOL scores are good. While some post-operative kyphosis correction is lost over time, bony fusion was achieved in most of the patients. The thoracoscopic approach minimizes surgical morbidity, does not lead to serious complications, and provides a good option for PTK correction.

#ESA Abstracts 20190130 Epidemiology of Spinal Fractures in Amsterdam, the Netherlands

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Introduction: Spinal fractures may have large socioeconomic consequences. The prevalence and outcomes likely change over the years due to improved traffic safety, increasing population age and improved medical treatment. This is the first study to address the epidemiology of spinal fractures over a long period in the Netherlands. **Methods:** A retrospective epidemiological study was performed. All patients with a cervical, thoracic or lumbar spine fracture admitted to a level 1 trauma centre from 2007 to 2016 were prospective registered and retrospectively analysed. In addition to patient-, accident- and associated injury characteristics, radiological and surgery data were obtained from the hospital's Electronic Patient File system.

Results: Between 2007 and 2016, 1479 patients with a total of 3029 spinal fractures were admitted. 40,8% were female and 59,2% were male, with a mean age of 52,0 years. 4,9% of fractures occurred at a juvenile age (0-18) and 63,6% at the age of 19-64 years. Most fractures occurred in the thoracic spine, followed by the lumbar- and cervical spine. The most common cause of injury was a fall from height, followed by traffic accidents. Spinal cord injury occurred in 8,5% and associated injuries

were reported in 73% of the patients. Sixteen percent of the admitted patients were treated operatively. Over time, there was a larger increase in amount of spine fractures in elderly (>65 years) compared to younger people.

Conclusion: A considerable number of spine fractures occur in the age-group 19-64 years. Most fractures were in the thoracic spine. The total amount of spine fractures per year increased over time, especially in the elderly. This study might stimulate development of policy on precautionary actions to prevent spine fractures.

#ESA Abstracts 20190131 Single-Stage Debridement, Decompression and Circumferential Reconstruction for Lumbar Tuberculous Spondylitis in a Young Woman: A Posterior-only Approach

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Introduction: Spinal tuberculosis accounts for almost 50% of all skeletal involvements amongst the rather less common extra-pulmonary manifestations of the disease. Older children and young adults are more often affected in the developing countries as against older adults in the developed world. Lumbar spine remains the second most affected region of the vertebral column in tuberculous spondylitis. Global reconstruction with adequate debridement and decompression, all through posterior approach alone, is one of the surgical treatment modalities in the management of this disease. It has been gaining increasing recognition in the literature in recent time, especially in the western world as it precludes the attendant morbidities associated with anterior and combined approaches.

Case Presentation: A 33-year-old female presented to our facility with lumbar tuberculous spondylitis; had 8-month history of low back pain and 4-month of progressive lower back swelling with associated fever, drenching night sweats and progressive weight loss.

Results: She had a single-stage debridement plus 1.5L abscess drainage and instrumented fusion via a posterior-only approach at the 4th month on multi-drug anti-tubercular treatment and was discharged home without any untoward post-operative sequela. She is already ambulating with normal gait and gaining weight by the 9th month follow-up visit.

Conclusion: The posterior-only approach for 360° instrumented fusion is quite rewarding in the operative care of spinal tuberculosis as shown in this report.

#ESA Abstracts 20190132 Traumatic Brown-Sequard Syndrome: A Case Series and Literature Review

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Introduction: Various therapeutic management options are available in the management of traumatic Brown-Sequard syndrome. Conservative option is a controversial issue.

Case Presentation: We report 3 cases of Brown-Sequard syndrome (BSS). Two were caused by penetrating (stab) injury while the third

was following a domestic fall. The first is a 47-year old man who was brought to the emergency department 6 hours after a knife stab injury to the left aspect of the middle third of his back following an assault. The patient complained of hemiparesis of the left-lower extremity, and ipsilateral hypoesthesia and contralateral sensory loss of pain and temperature were also found on neurological examination. MRI showed a signal change at T10/T11 cord level. The second is a 37-year old man who presented to the emergency department 26 hours after a knife stab injury to the left side of the lower posterior neck following an assault. The patient complained of hemiparesis of the left-side extremities, and ipsilateral hypoesthesia and contralateral sensory loss of pain and temperature were also found on neurological examination. MRI showed high signal change at C3/C4 cord level and the tract of the stab wound through the posterior neck. The third is a 15-year-old girl that fell at home and sustained traumatic spondylolisthesis at C7/T1 level. She had left lower limb hemiparesis and diminished pain and temperature sensation on the right.

Results: All three patients were managed non-operatively and were followed up for 6 months to 1 year during which they made significant neurologic recovery.

Conclusion: Conservative therapy of effective and safe method in management of traumatic Brown-Sequard syndrome.

#ESA Abstracts 20190133

Cervical Spine Tuberculosis: Outcome After One Stage Surgical Decompression and Fixation with Unique Standalone Cage

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Pakistan

Introduction: This prospective study was conducted at Department of spine surgery, Ghurki Hospital, Pakistan from Jan 2008 to Dec 2017. The main objective of this study was to determine the outcome after one stage anterior debridement, bone grafting and stabilization with standalone titanium cage in a 3rd world country.

Methods: All patients with cervical spine tuberculosis of either gender and any age were included in the study. All the patients underwent one stage anterior debridement and stabilization with standalone titanium cage filled with autologous iliac bone graft. Outcome measures included neck pain using VAS, Frankel scale, bony fusion, Cobb angle of cervical kyphosis and cost of implant. SPSS 17.0 was used for data analysis.

Results: Total 98 patients (50 males/48 females) of mean age 42.12 ± 13.778 . The mean preoperative VAS scoring was 7.99 ± 1.744 & at last follow up, it was 1.60 ± 1.578 . The kyphotic deformity preoperatively

was 19.15 ± 15.068 & post operatively it was -4.81 ± 6.567 . Post operative FRANKEL Scale was significantly improved ($p < 0.005$). The cost of implant remained the same in all patients US \$ 30-50 and bony fusion in all patients.

Conclusion: One-stage anterior debridement, autologous bone grafting, and stabilization with titanium Standalone cage can effectively remove debris, decompress the cord, reduce pain & correct kyphosis in patients with cervical tuberculosis. The implant is cost effective with excellent stability and should be considered in third world countries.

#ESA Abstracts 20190134

Thoracolumbar Junction Trauma: Retrospective Cohort Study

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Pakistan

Introduction: We aimed to evaluate the improvement in neurological deficit following early versus late decompression and stabilization of thoracolumbar junctional fractures.

Methods: This is a retrospective evaluation of all patients with a traumatic spinal cord injury (SCI) from T11 to L2 treated at a teaching hospital between 2010 and 2017. Grouped analysis was performed comparing the cohort of patients who received early surgery within 24 hours (group 1) with those operated within 24 to 72 hours (group 2) and more than 72 hours after SCI (group 3). The primary outcome was the change in ASIA (American Spinal Injury Association) motor score at 12-month follow-up.

Results: There were 317 patients (225 males and 92 females with mean age of $31.55 + 12.43$ years). A total of 144, 77, and 96 patients belonged to groups 1, 2, and 3 respectively. Improvement of at least 1 grade on ASIA classification was observed in 80, 45, and 33 patients in groups 1, 2, and 3 respectively ($P = 1/4 .001$). Overall, 32, 12, and 10 patients improved 2 grades on ASIA classification in groups 1, 2, and 3, respectively ($P = 1/4 .069$). On logistic regression analysis, early surgery, and severity of initial injury (complete [ASIA A] vs incomplete SCI [ASIA B-D]) were found to significantly influence the potential for neurologic improvement ($P = 1/4 .004$ and $P < .0001$, respectively).

Conclusion: We believe that the earlier the decompression, the better. The 72-hour cutoff represents the most promising time window during which surgical decompression has the potential to confer a neuro-protective effect in the setting of incomplete SCI (ASIA B-D) in the distal region of the spinal cord (conus medullaris).